



To the Minister of Agriculture, Nature and Food Quality

Subject : Advisory letter *Organically grown food*
Your reference : -
Our reference : 115/09/EJS/mj/algemeen Publication no. 2009/20E
Enclosure(s) : -
Date : December 14, 2009

Dear Minister,

For some time now, organically grown food has been a topic of societal concern. This primarily stems from many people's firm commitment to sustainability and animal welfare. In that regard, such food usually enjoys more support than conventionally produced food. On another issue, however, there is far less clarity. Is organically cultivated food also healthier?

This issue is explicitly addressed in your request for advice (included as Annex A) concerning the significance of the results of the "Organic, More Healthy?" project, which was conducted under the auspices of the Louis Bolk Institute^{1,2}. In this connection you enquired about the usefulness of biomarkers, and ask "what are the essential elements of a study into a product's impact on health". In this advisory letter, I would first like to examine issues relating to the project in question. I would also like to place my comments in the broader perspective of a healthy diet. I have consulted the Standing Committee on Nutrition regarding each of these points.

Study of a markedly heuristic nature

The aim of the "Organic, More Healthy?" project was to identify biomarkers (indicators of biological processes) that could be used to highlight the possible health effects of organic food. To this end, a blinded experiment was carried out on two generations of chickens. The composition of the mixed feed given to both groups was the same, except that one was derived from conventional products, while the other was based on organic products. One reason for using chickens as the experimental animals in this study was the researchers' expectation that immunological differences might occur. As the chicken's immune system resembles that of humans, any observed differences might also be significant in terms of human health.

The study report contains a very detailed account of the numerous measurements made.¹ The ingredients of the feeds used in the study were examined, as were a large number of biomarkers.



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The researchers argue that the most informative results were those obtained from animals in the second-generation control group, as that population represents naturally occurring genetic variation.

The two groups of animals that had received different feed exhibited differences in several immunological biomarkers (various parameters for immune responsiveness, and the response to a challenge test with a non-pathogenic protein (referred to as a KLH challenge)). According to the researchers, the results as a whole indicate that animals fed on organic products have an enhanced immune response. At the same time, however, they note that it remains unclear what this findings means in terms of health. The same consideration applies to other physiological parameters (associated with the animals' metabolism) that were examined in this study.

On the basis of these findings and conclusions, I would like to make the following observations. Firstly, a heuristic study of this kind can be expected to generate large amounts of data. Indeed, that was the whole point of the exercise. However, the more biomarkers that are measured, the greater the likelihood of chance findings. It is unclear to what extent this applies here.

A more important consideration, however, is that biomarkers are sometimes just indicators of a normal biological condition or variation. Proven risk factors, the early stages of diseases and disorders (or their biological characteristics), are quite another matter. One example would be elevated cholesterol levels in the case of heart disease. Another would be the presence of autoantibodies in the blood in the case of autoimmune diseases, such as rheumatoid arthritis. In theory, such biomarkers offer a means of disease-prevention or of targeted medical treatment. The same biomarkers can also be used to quantify the associated potential health gains.

As far as can be determined, the immunological biomarkers and other biomarkers measured by the researchers are unrelated to pathological processes. Similarly, their study provided no evidence that organic feed and standard feed differ in terms of their effect on such processes, which suggests that they are unlikely to differ in medical terms. The researchers seem to be suggesting something else entirely, however. Might the observed differences indicate degrees of good health? In other words, can healthy people become even healthier? This approach is reminiscent of the debate about the health claims made for certain foods and food supplements. Before addressing that issue, I would like to briefly summarise what we have already learned from scientific research into organic foods versus conventional foods.



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The current level of knowledge is surprisingly limited

Remarkably, scientific research is substantially out of step with societal concerns when it comes to organically grown food. While numerous articles have been published on this topic, in only a few cases does the methodology used stand up to critical analysis. This is evident from the first systematic review to be devoted to this issue, which was just published this year.^{3,4}

The review is in two parts. The first section explores studies which compared the nutritional quality of organically and conventionally grown food.³ According to the authors, only 55 of the more than 52,000 publications produced since 1958 were of an acceptable scientific quality. They conclude that there is no difference between these categories of food in terms of their nutritional quality. Furthermore, the minute differences in nutritional composition that were detected were biologically plausible and appeared to be related to the choice of fertilizer and the time of harvest. Part two of the analysis involved the health effects of organic and conventional foods.⁴ Here the harvest was even more meagre. Just 11 of the nearly 92,000 articles published since 1958 withstood the selection procedure. Moreover, even these acceptable articles were found to be extremely heterogeneous in terms of study design, food intake, and health indicators (often a given level of antioxidant activity). In the investigators' opinion, as a group, these publications do not support the assertion that "organic is healthier" (the hypothesis that formed the starting point for eight of the eleven studies).

It should be noted, however, that this systematic review did not examine the levels of contaminants (such as pesticides and natural toxins) in food. However, another recently published review article did address certain elements of this issue.^{5,6} It was concluded that the vast majority of organic foods do not contain pesticide residues. In addition, review article's conclusions regarding nutrients more often tend to favour organically cultivated products. In terms of methodology, however, the latter analysis was less robust than the systematic review discussed above. For instance, there is a lack of clarity concerning the chosen search strategy. Nor, indeed, had some of the literature included been subjected to peer review, which would otherwise have provided quality assurance safeguards. I therefore believe that the systematic review in question best reflects the current level of knowledge.

What does 'healthier' really mean?

The Health Council of the Netherlands has a long tradition of providing advice on healthy diets. In the process it has had to address, sometimes explicitly and sometimes implicitly, exactly what



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constitutes health and how diet can influence it, for better or worse. Key recommendations are regularly summarised in the Guidelines for a healthy diet.⁷ More specific themes are also raised concerning the quality of certain foods and categories of food. Last year, for example, an advisory report was published on logos that indicate whether a given product is considered to be beneficial to health.⁸ Moreover, in August 2003, the Health Council issued an advisory report on foods and food supplements that were claimed to have health effects.⁹ I feel that the latter advisory report has made a useful contribution to the debate on whether organically cultivated foods are indeed healthier.

The advisory report on claims contains a detailed explanation of why, in scientific terms, there is no difference between “promoting or maintaining health”, “disease prevention” or “reduction of disease risk”. Comparatively speaking, therefore, foods can only be said to be healthier as they increasingly reduce disease risk. Moreover, foods contain numerous nutrients in varying concentrations and combinations. This is why the 2006 advisory report entitled “Guidelines for a healthy diet”⁷ stressed that, from the point of view of disease prevention, the emphasis should be on the diet as a whole, and not on individual foods or food ingredients.

Towards a better dietary pattern

There is still a considerable discrepancy between the optimal dietary pattern laid out by “Guidelines for a healthy diet” and the Dutch population’s actual food consumption.^{7,10} There is scope for improvement, both in terms of consumption and production. To help consumers, the Nutrition Centre has translated “Guidelines for a healthy diet” into lists of recommended foods, known as the “Food-based dietary guidelines”.¹¹ In addition to a general description of what constitutes a healthy dietary pattern, these guidelines divide foods into three categories on the basis of their composition: ‘preferred’, ‘medium level’, and ‘only rarely’. The Health Council has suggested various ways in which choice-promoting logos could best reflect these categories.⁸ As stated above, the scientific evidence obtained to date does not indicate that the cultivation method used (organic or conventional) has any effect on the nutritional quality of foods.

It is also essential that the food industry improves the nutritional composition of products or that it develops new high-quality products. As the quality of products improves, consumers will find it increasingly easy to make good choices. In my view, this line should be reflected in the main thrust of future research into organically cultivated foods. To put it another way, given the current level of knowledge, preference should be given to research into nutritional composition. In addition, a parallel research effort should be conducted to systematically explore the situation



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concerning the presence of pathogens and environmental contaminants in such foods. Also, according to Dutch research, this area is still too poorly understood.^{12,13} These approaches would be perfectly in keeping with broader research programmes into the effect of all manner of production techniques. In view of the above, I am less in favour of the plans put forward by the participants in the “Organic, More Healthy?” project, for further animal studies, eventually moving on to human subjects.

In conclusion

My comments do not detract from the fact that, with regard to sustainability issues, organically cultivated foods deserve separate consideration. Your Policy Document on Sustainable Food further underlines the importance of this issue.¹⁴ There are increasing doubts about the extent to which healthy and sustainable dietary patterns run parallel to one another. As stated in its 2010 Work Programme, the Health Council intends to respond to your request by issuing an advisory report on this matter.

Yours sincerely,

(signed)

Professor J.A. Knottnerus
President, Health Council of the Netherlands



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Request for advice

On 4 May 2009, Gerda Verburg, the Minister of Agriculture, Nature and Food Quality (LNV), sent the following letter (reference VD.2009/707) to the President of the Health Council.

One of the topics included in the Health Council's 2009 Work Programme was the question "How healthy are organically cultivated foods?".

Society is increasingly interested in organically produced food, partly because consumers assume that it is also healthier. For instance, people's natural immune system is thought to benefit from the consumption of organic products. A consortium, which investigated this issue at the request of the Ministry of Agriculture, Nature and Food Quality (LNV) and the organic sector, published its report in late 2007. In the course of this study, chickens were given either organic or conventional feed. Several differences between the two groups of chickens were observed. However, the investigators were unable to reach agreement concerning the interpretation of their research results.

In their report, the researchers recommended that further research be carried out. Before taking a decision on the funding of such research, the Minister of Agriculture, Nature and Food Quality (LNV) would like the Health Council to draw up an advisory report on how such research should be conducted and evaluated. One aspect involves questions about methodology, such as "What are the essential elements of a study into a product's impact on health?". "Which biomarkers can be identified?". The other aspect concerns the inter

pretation of the findings. “If differences can be found between products produced in different ways, what is the significance of such findings in terms of the healthiness of the products in question?”.

I would be grateful if this advisory report could be in my possession before the end of 2009.

The Minister of Agriculture, Nature and Food Quality

(signed)

G. Verburg